Claims

A gas sensor (1) comprising a substrate (2) of a first charge carrier type, whereon a drain (3) and a source (4) of a second charge carrier type are arranged, wherein a channel area (8) is formed between the drain (3) and the source (4), and with a gas-sensitive layer (10) comprising poles (11, 12), between which a gas-induced voltage is produced according to the concentration of a gas which is in contact with the layer (10), wherein in order to measure the voltage, the gas-sensitive layer (10) is capacitatively coupled by one of its poles (12) to the channel area (8) over an air gap (14) and by its other pole (11) to a counter-electrode (13) having a reference potential, **characterized in that** a hydrophobic layer (19) is arranged on the surface of the gas sensor (1) between the gas sensitive layer (10) and the channel area (8) and/or a sensor electrode (16), which is electrically connected to a gate electrode (22) arranged on the channel area (8).

A gas sensor (1) as defined in claim 1, characterized in that it has an electrically conductive guard ring (18) on its surface, which delimits the channel area (8) and/or the sensor electrode (16) leading to the channel area (8) from the channel area (8) and/or the sensor electrode (16) by means of a space, and further characterized in that the hydrophobic layer (19) is arranged in at least one area of the surface of the gas sensor (1) located between the guard ring (18) and the channel area (8) and/or the sensor electrode (16).

A gas sensor (1) as defined in claim 1 or in claim 2, characterized in that the hydrophobic layer (19) extends continuously over the channel area (8) and/or the sensor electrode (16).

A gas sensor (1) as defined in any one of claims 1 through 3, characterized in that the hydrophobic layer (19) is separated from the channel area (8) and/or the

sensor electrode (8) *[sic]* and delimits the channel area (8) and/or the sensor electrode (16) preferably in a ring- or frame-like manner.

A gas sensor (1) as defined in any one of claims 1 through 4, characterized in that the static contact angle of the hydrophobic layer (19) measured with water and obtained on a planar surface is at least 70°, if necessary at least 90°, especially at least 105° and preferably at least 120°.

A gas sensor (1) as defined in any one of claims 1 through 5, characterized in that molecules of the hydrophobic layer (19) are covalently bound to the surface of an adjacent, preferably semi-conductive or electrically insulating layer of the gas sensor (1).

A gas sensor (1) as defined in any one of claims 1 through 6, characterized in that the hydrophobic layer (19) contains at least one polymer.

A gas sensor (1) as defined in any one of claims 1 through 7, characterized in that the polymer is a fluoride and preferably a perfluoride polymer.

A gas sensor (1) as defined in any one of claims 1 through 8, characterized in that the polymer is connected by an intermediate layer (20) that is preferably in the form of a monolayer to an adjacent, preferably semi-conductive or electrically insulating layer of the gas sensor (1), and further characterized in that the intermediate layer (20) has at least one reactive group anchored on the adjacent layer, and that the polymer is coupled preferably by means of a covalent bond to the intermediate layer (20).

A gas sensor (1) as defined in any one of claims 1 through 9, characterized in that the hydrophobic layer (19) has a surface profiling with projections and depressions.

A gas sensor (1) as defined in any one of claims 1 through 10, characterized in that the depressions are in the form of slots or grooves and preferably form a frame or a ring around the channel area (8) and/or the sensor electrode (16).